

## ABSTRACT

[0062] A method of optimizing a communication system for receiving and processing an input communication signal includes selecting a first noise margin  $m$  to be applied against an external noise present on the input communication signal. The method further includes selecting a second noise margin  $m_i$  to be applied against an internal noise introduced on the communications signal by the communication system. The second noise margin is a predetermined function of the first noise margin. The method also includes calculating a virtual noise to signal ratio that is a combination of an external noise to signal ratio  $NSR_e$ , an internal noise to signal ratio  $NSR_i$ , the first noise margin and the second noise margin. The method further includes adjusting one or more system parameters so as to maintain the virtual noise to signal ratio at a predetermined margin above a required noise to signal ratio.